

**REMARKS**

Claims pending in the instant application are numbered 1-27. Claims 1-27 are rejected.

The Applicant respectfully requests reconsideration of the present application in view of the following remarks.

***35 U.S.C. § 112 Rejections***

Claims 7, 18, 19 and 27 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Specifically, the Examiner asserts that the specification lacks support for a “fourth lateral taper rate.”

To satisfy the written description requirement, a patent specification must describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention (M.P.E.P § 2163 citing *Vasanth, Inc. v. Manhurkar*, 935 F.2d 1555, 1563 (Fed. Cir. 1991)).

The Applicant respectfully submits that Figure 5 and specification pages 10-11 as originally filed describe an embodiment of the taper regions and the taper rates to support claims 7, 18, 19 and 27. In the embodiments on pages 10-11, the first and second taper regions of the buried tapered waveguide mask 503 correspond to the regions shown by lengths L1 and L2, respectively. The first taper region has a first lateral taper rate from W0 to W2 over length L1 and the second taper region has a second lateral taper rate from W2 to a sharp point over length L2.

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Also in the embodiments on pages 10-11, the first and second taper regions of the tapered rib waveguide mask 505 correspond to the regions shown by L1 and L2, respectively. The first taper region has a first lateral taper rate (i.e., a third lateral taper rate) from W1 to W1 over length L1 and the second taper region has a second lateral taper rate (i.e., a fourth lateral taper rate) from W1 to W3 over length L2.

Thus, the Applicant respectfully requests that the instant § 112 rejections be withdrawn.

*35 U.S.C. § 103 Rejections*

Claims 1-13 and 14-21 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Joen, U.S. 6,174,748, in view of Yamamoto, U.S. 6,030,540.

Claims 22-27 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Joen in view of Yamamoto and Soljacic, U.S. 2003/0031443.

Claim 1 expressly recites (emphasis added):

An apparatus, comprising:

a buried tapered waveguide disposed in a semiconductor layer; and

a tapered rib waveguide disposed in the semiconductor layer proximate to the buried tapered waveguide, the tapered rib waveguide including a rib portion adjoining a slab portion, the slab portion of the rib waveguide adjoining the buried tapered waveguide, wherein an optical beam is directed into a larger end of the buried tapered waveguide and the tapered rib waveguide, the buried tapered waveguide tapered to guide the optical beam therethrough into the slab portion of the rib waveguide, wherein a vertical height of the

buried tapered waveguide at the larger end and at a smaller end opposite the larger end are substantially similar.

On page 5 of the instant Office Action, the Examiner acknowledges that Joen fails to disclose "a vertical height of the buried tapered waveguide at the larger end and at a smaller end opposite the larger end are substantially similar" as claimed by the Applicant. The Examiner proposes combining Yamamoto with Joen to reach the Applicant's claimed invention.

The Applicant submits that there is no motivation or suggestion to combine Joen with Yamamoto (or Soljacic) as asserted by the Examiner. Indeed, Joen teaches away from removing the tapering from the waveguide of Joen. An expressly stated object of Joen is to fabricate a vertical taper (col. 2, lines 60-64). To modify Joen as asserted by the Examiner is in direct contrast to the teachings of Joen (col. 2, lines 17-21 and lines 60-64; col. 2, line 66, to col. 3, line 3). The proposed modification would change the principle of operation of Joen to transform a mode profile from an elliptical profile to a circular profile (col. 4, lines 1-21).

Thus, there is no suggestion or motivation to combine Joen with Yamamoto or Soljacic as asserted by the Examiner. Indeed, Joen teaches away from the Examiner's proposed modification of Joen. Accordingly, claim 1 is not rendered obvious by the cited references. Independent claims 8, 14 and 22 distinguish for at least the same reasons as claim 1. Claims 2-7, 9-13, 15-21 and 23-27 are dependent claims and distinguish for at least the same reasons as their respective independent claims in addition to adding further

limitations of their own. Therefore, the Applicant respectfully requests that the instant § 103 rejections be withdrawn.

*Conclusion*

The Applicant submits that in view of the remarks set forth herein, all pending claims are in condition for allowance. Therefore, the Applicant respectfully requests the Examiner to issue a Notice of Allowance in this case.

*Charge Deposit Account*

Please charge our Deposit Account No. 02-2666 for any additional fee(s) that may be due in this matter, and please credit the same deposit account for any overpayment.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN

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Anthony H. Azure

Reg. No. 52,580

Phone: (206) 292-8600 x311